STUDIES OF HIGHWAY IMPACT IN INDIANA

PROGRESS REPORT NO. 2

EARLY EFFECTS OF A PORTION OF INTERSTATE 65

JUNE 1961

NO. 18

by

J. A. FLETCHER

Joint Highway Research Project

PURDUE UNIVERSITY
LAFAYETTE INDIANA

STUDIES OF HIGHWAY IMPACT IN INDIANA
PROGRESS REPORT NO. 2
EARLY EFFECTS OF A PORTION OF INTERSTATE 65

TO: K. B. Woods, Director
Joint Highway Research Project

June 21, 1961

FROM: H. L. Michael, Assistant Director
Joint Highway Research Project

File: 8-5-2
Project: C-36-64B

Progress Report No. 2 of the research project "Studies of Highway Impact in Indiana", and titled "Early Effects of a Portion of Interstate 65" is attached. The report has been prepared by Mr. J. A. Fletcher, Jr., Graduate Assistant on the staff, under the direction of Professor H. L. Michael.

This report discusses the early effects of that portion of Interstate 65 between Lebanon and Indianapolis on travel characteristics, land use and land value. The report basically establishes a base of information from which future changes and effects can be evaluated. Few changes except to travel characteristics have as yet occurred because of the highway improvement.

The report is submitted for the record. It will also be submitted to the State Highway Commission of Indiana and the Bureau of Public Roads for review and information as a progress report on this cooperative project.

Respectfully submitted,

Harold L. Michael/kmc

Harold L. Michael, Secretary

HLM:kmc

Attachment

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EARLY EFFECTS OF A PORTION OF INTERSTATE 65

by

J. A. Fletcher, Jr.
Graduate Assistant

Joint Highway Research Project
File No: 8-5-2
Project No: C-36-64B

Purdue University
Lafayette, Indiana

June 21, 1961

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Acknowledgment is also made to the staff of the Office of the Attorney General of the State of Indiana; to the Auditors and Recorders of the various counties involved; to other members of the State Highway Department of Indiana; and to the staff of the Joint Highway Research Project for their assistance in performing the study.

TABLE OF CONTENTS

	Page
LIST OF TABLES	iv
LIST OF FIGURES	v
ABSTRACT	vi
EARLY EFFECTS OF A PORTION OF INTERSTATE 65	1
Introduction	1
Cost of Facility	16
Characteristics of Travel	20
Traffic Volumes	20
Speeds and Travel Times	22
Accidents	27
Changes in Traffic Patterns	30
Land Use	32
Land Value	33
SUMMARY AND RECOMMENDATIONS	45
Summary of Results	45
Recommendations	46
LIST OF REFERENCES	48
APPENDIX A	50

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LIST OF TABLES

Table		Page
1	Length and Location of Construction Projects . .	3
2	Project Costs by Elements.	17
3	Estimated Right-of-Way Costs	19
4	Traffic Volumes on U. S. 52.	21
5	Traffic Volumes on Interstate 65	21
6	Speeds and Travel Times on U. S. 52 Prior to Construction of Interstate 65.	24
7	Vehicle Operating Costs.	26
8	Accident Rates per 100 Million Vehicle-Miles of Travel	28
9	Accident Summary	29
10	Summary of U. S. 52 Intersections.	31
11	Land Use by Counties	33
12	Comparison of Indicated Values of Transactions .	40
13	Band Widths.	41
14	Land Value Data.	42

LIST OF FIGURES

Figure		Page
1	Location of Study Facilities	2
2	Interstate 65 - Project 1 - 03 - 4(8), Boone	4
3	Interstate 65 - Project 1 - 03 - 4(11), Boone. . . .	5
4	Interstate 65 - Project 1 - 03 - 3(1), Boone , Hendricks, Marion.	6
5	Interstate 65 - Project 1 - 03 - 3(4), Marion. . . .	7
6	S. R. 267 Interchange.	9
7	Looking North from S. R. 334	9
8	Looking South from S. R. 267	10
9	Looking South from S. R. 334	10
10	Interstate 65 Over Old U. S. 52.	11
11	Construction - 71st Street Interchange	11
12	Interstate 65 and S. R. 267 Interchange	12
13	Interstate 65 and S. R. 334 Interchange.	13
14	Interstate 65 and 71st Street Interchange.	14
15	Location of Study Area	15
16	Predicted Volumes - South of S. R. 334	23
17	Deed History Sheet	35
18	Typical File Cards	37
19	Request for Land Value Data.	38
20	Form Enclosed with Letter.	39
21	Examples of Coded Parcels.	53

ABSTRACT

Many states have initiated research into the field of the impact of highway improvements. These studies are concerned with many effects brought about by highway improvements such as general economic effects, land use, land value, traffic patterns, safety, and many others.

This report discusses some of the initial effects of a 13.081 mile length of Interstate 65 between Lebanon, Indiana and Indianapolis, Indiana. The elements included in the study are the cost of the facility; characteristics of travel, such as traffic volumes, speeds and travel times, accidents, and changes in traffic patterns; land use; and land value.

The study showed that substantial benefits are available to the motorist in the form of time saved by using the new facility, and indicated the possibility of further benefits due to accident reduction, although sufficient time has not elapsed to substantiate this possibility.

Few changes in land use or land value have occurred within the study area as yet, due to the agricultural character of the majority of the land, and the distance of the study area from current development, but indications are that substantial development will occur within the study area soon.

EARLY EFFECTS OF A PORTION OF INTERSTATE 65

Introduction

Interstate 65 is that portion of the Interstate System extending between Chicago and the Gulf of Mexico, passing through Indianapolis; Louisville, Kentucky; Nashville, Tennessee; Birmingham and Montgomery, Alabama; to Mobile, Alabama, on the Gulf of Mexico.

The portion of Interstate 65 included in this report is a thirteen mile stretch in Indiana, passing through parts of Boone, Hendricks and Marion Counties (Facility 2 in Figure 1). The study facility extends southeastwardly from the south end of the by-pass around Lebanon, Indiana to the north approaches of the Interstate 465 interchange, approximately eight miles northwest of the central business district of Indianapolis, Indiana.

The facility was constructed in four separate sections, or construction projects. Table 1 identifies the construction projects, and Figures 2 through 5 show the alignment of the facility and the parcels of land through which it passes. Approximately nine miles of the facility are in Boone County, one-half mile in the northeast corner of Hendricks County, and the remaining three and one-half miles in Marion County.

This section of the facility, built to Interstate

LOCATION OF STUDY FACILITIES

Figure 1

TABLE I

LENGTH AND LOCATION OF CONSTRUCTION PROJECTS

Project Number	Length (miles)	Location
I - 03 - 4(8)	4.087	Southeastwardly from the south end of the Lebanon by-pass to just south of the S. R. 267 interchange in Boone County.
I - 03 - 4(11)	3.200	Southeastwardly from south of the S. R. 267 interchange to just south of the S. R. 334 interchange in Boone County.
I - 03 - 3(1)	3.043	Southeastwardly from south of the S. R. 334 interchange to 86th Street just west of the intersection of U. S. 52 and S. R. 100, passing through parts of Boone, Hendricks, and Marion Counties.
I - 03 - 3(4)	2.751	Southeastwardly from 86th Street to just north of the Interstate 465 interchange in Marion County.

standards, is a four-lane divided highway with complete control of access, twelve foot lane widths, variable median width, ten foot minimum shoulder width, and three percent maximum grades. Frontage roads were constructed, as shown in Figures 2 and 3, along the northeast edge of the facility from the Lebanon by-pass to State Road 334, a distance of approximately seven miles. Short stretches of frontage road were also constructed in the southern part of Boone County, and in Hendricks and Marion Counties as shown in Figures 4 and 5.

There are three complete diamond interchanges and one partial directional interchange included within the study

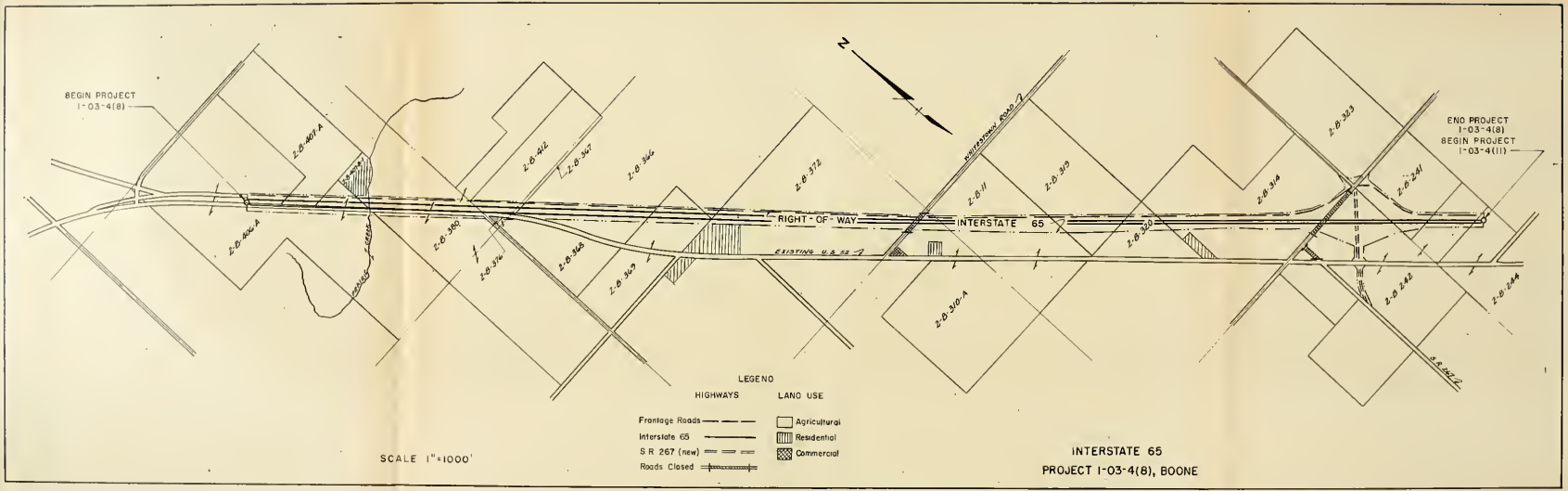

BEGIN PROJECT
I-03-4(8)
END PROJECT
I-03-4(8)
BEGIN PROJECT
I-03-4(11)
RIGHT-OF-WAY
INTERSTATE 65
EXISTING U.S. 52
CRITTENDEN ROAD
CREEK
Z-B-401-A
Z-B-426-A
Z-B-412
Z-B-347
Z-B-346
Z-B-380
Z-B-374
Z-B-368
Z-B-349
Z-B-372
Z-B-111
Z-B-313
Z-B-310-A
Z-B-320
Z-B-314
Z-B-323
Z-B-241
Z-B-242
Z-B-244
LEGEND
HIGHWAYS
Frontage Roads
Interstate 65
S R 267 (new)
Roads Closed
LAND USE
Agricultural
Residential
Commercial
SCALE 1"=1000'
INTERSTATE 65
PROJECT I-03-4(8), BOONE

Figure 2

65
XISTING
ND USI
Agricul
Cemeto
Junk Y

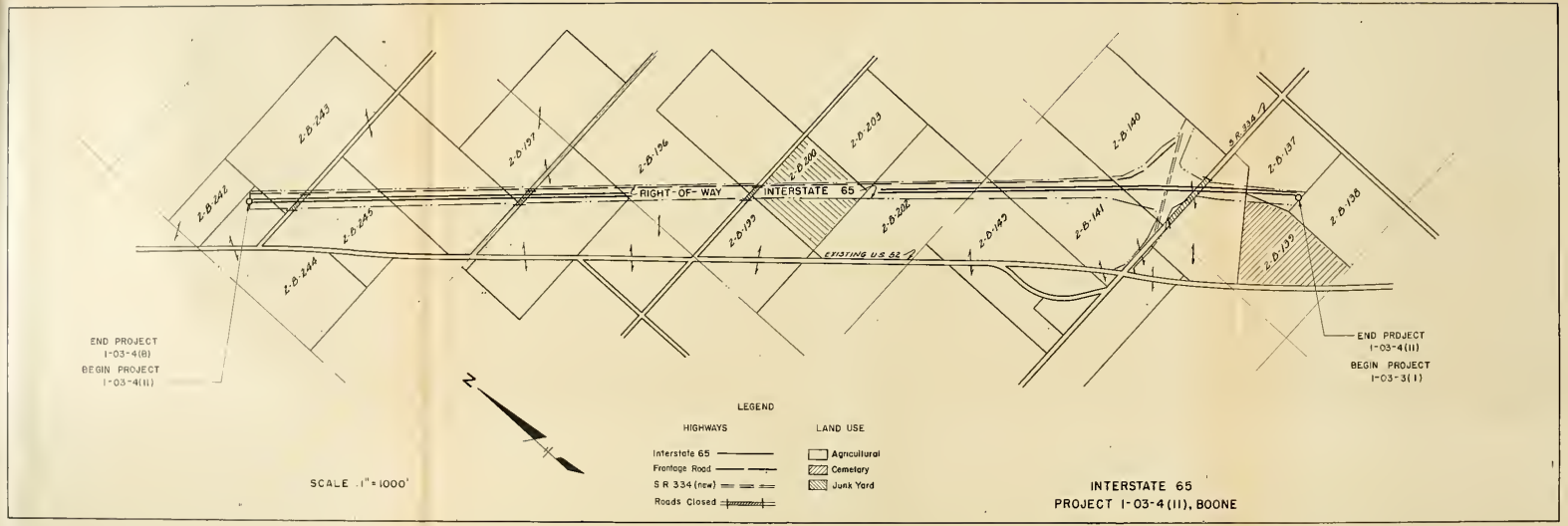
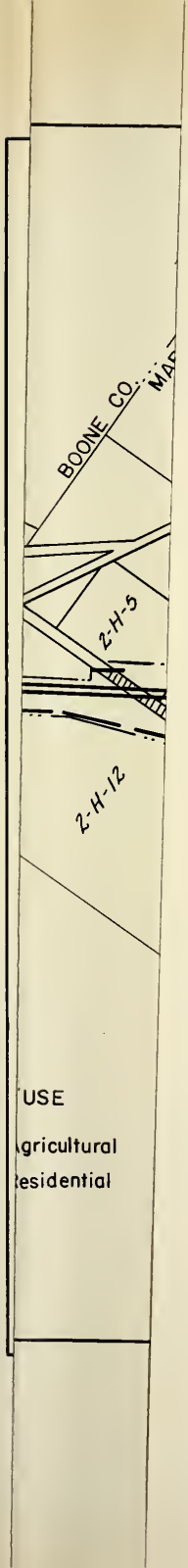
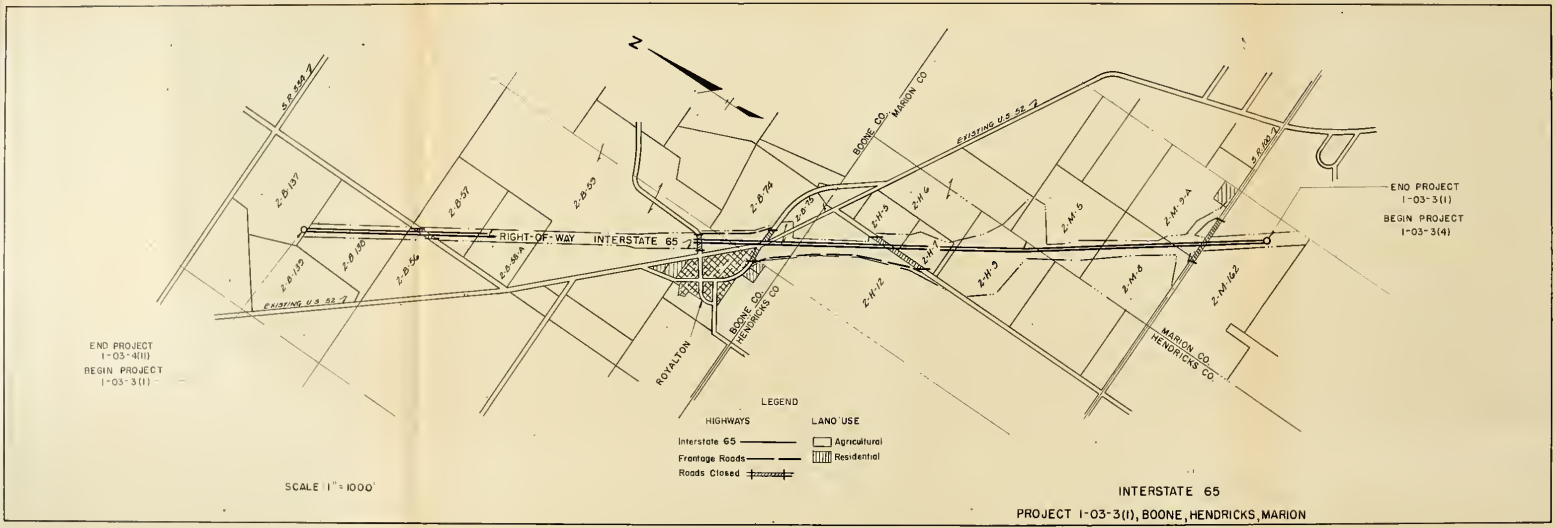

Z-D-242
Z-D-243
Z-D-244
Z-D-245
Z-D-136
Z-D-137
Z-D-139
Z-D-1100
Z-D-203
Z-D-202
Z-D-140
Z-D-141
Z-D-143
S.R. 334-2
Z-D-137
Z-D-138
Z-D-132
RIGHT-OF-WAY
INTERSTATE 65
EXISTING U.S. 52
END PROJECT
I-03-4(8)
BEGIN PROJECT
I-03-4(11)
END PROJECT
I-03-4(11)
BEGIN PROJECT
I-03-3(1)
N
LEGEND
HIGHWAYS
Interstate 65
Frontage Road
S R 334 (new)
Roads Closed
LAND USE
Agricultural
Cemetary
Junk Yard
SCALE .1" = 1000'
INTERSTATE 65
PROJECT I-03-4(11), BOONE

Figure 3

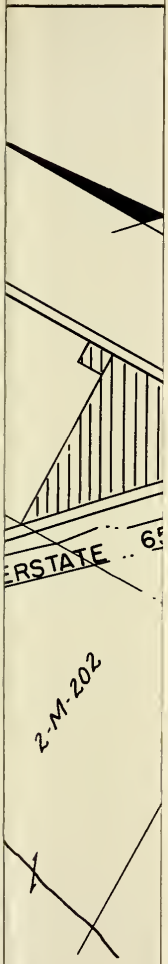

BOONE CO.
Z-H-5
Z-H-12
USE
gricultural
esidential



INTERSTATE 65

PROJECT I-03-3(1), BOONE, HENDRICKS, MARION

Figure 4



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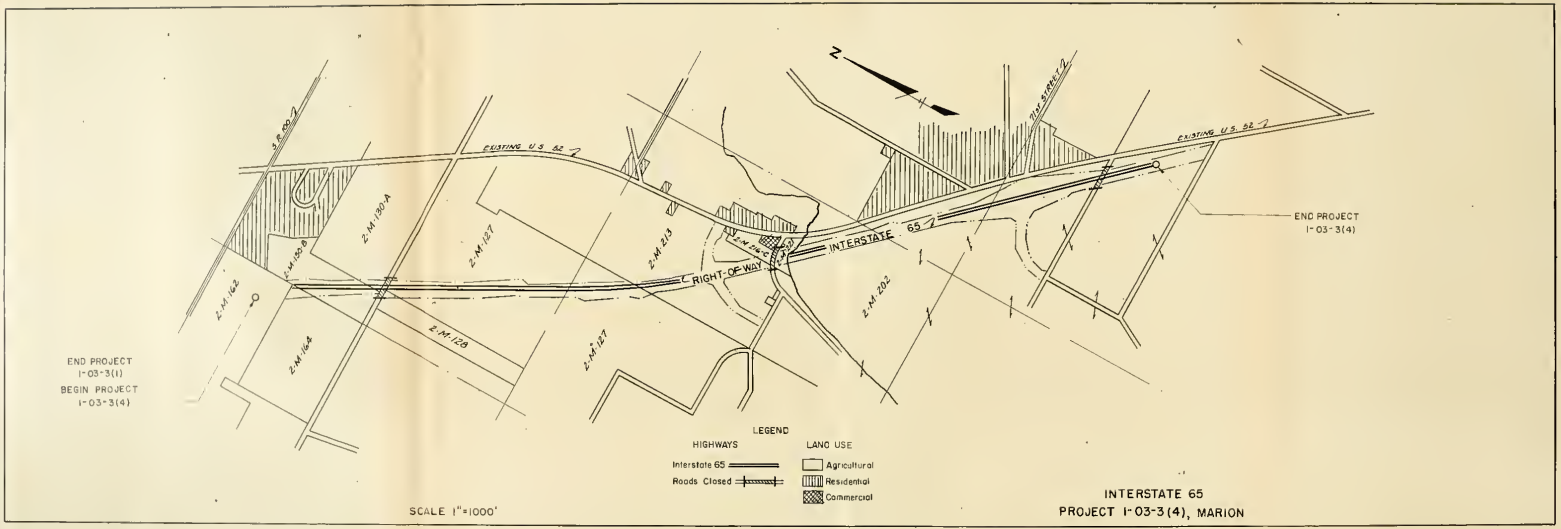

N
S.R. 60
EXISTING U.S. 62
Z-M-130-A
Z-M-130-B
Z-M-162
Z-M-164
Z-M-129
Z-M-127
Z-M-213
Z-M-128
Z-M-202
7TH STREET
EXISTING U.S. 62
INTERSTATE 65
RIGHT-OF-WAY
END PROJECT
I-03-3(4)
END PROJECT
I-03-3(1)
BEGIN PROJECT
I-03-3(4)
LEGEND
HIGHWAYS
Interstate 65
Roads Closed
LAND USE
Agricultural
Residential
Commercial
SCALE 1"=1000'
INTERSTATE 65
PROJECT I-03-3(4), MARION

Figure 5

length of Interstate 65. The diamond interchanges are at the intersections of Interstate 65 and S. R. 267, S. R. 334, and S. R. 434(71st Street). The partial directional interchange, as proposed, will permit southbound vehicles to continue eastwardly on the proposed north leg of Interstate 465, but will permit no other turning movements. Photographs of some of the structures and views of some of the topography encountered in this study are shown in Figures 6 through 11, and drawings of the diamond interchanges in Figures 12, 13 and 14.

The highway which Interstate 65 will replace, when completed, is U. S. 52, which is a two-lane highway in Boone and Hendricks Counties, and a four-lane divided facility with a four-foot median strip in Marion County. Interstate 65 has been constructed roughly parallel to, and approximately one thousand feet east of, existing U. S. 52 in Boone County. At the extreme southern end of Boone County Interstate 65 passes over U. S. 52 (Figure 10), and in Marion County U. S. 52 is east of Interstate 65 by as much as one-half mile. At the southern end of the study area the facilities are adjacent.

The boundaries of the study area were chosen to coincide with section lines for simplicity in data collection, and as a result of the diagonal alignment of the facility, the study area is irregular in shape (Figure 15). Approximately 69.5 square miles are included within the study area. The area extends a minimum of two miles beyond the right-of-way limits of the facility on each side, and three or more miles from the facility throughout much of its length.

S. R 267 INTERCHANGE

Figure 6

LOOKING NORTH FROM S.R.334

Figure 7

LOOKING SOUTH FROM S.R. 267

Figure 8

LOOKING SOUTH FROM S.R. 334

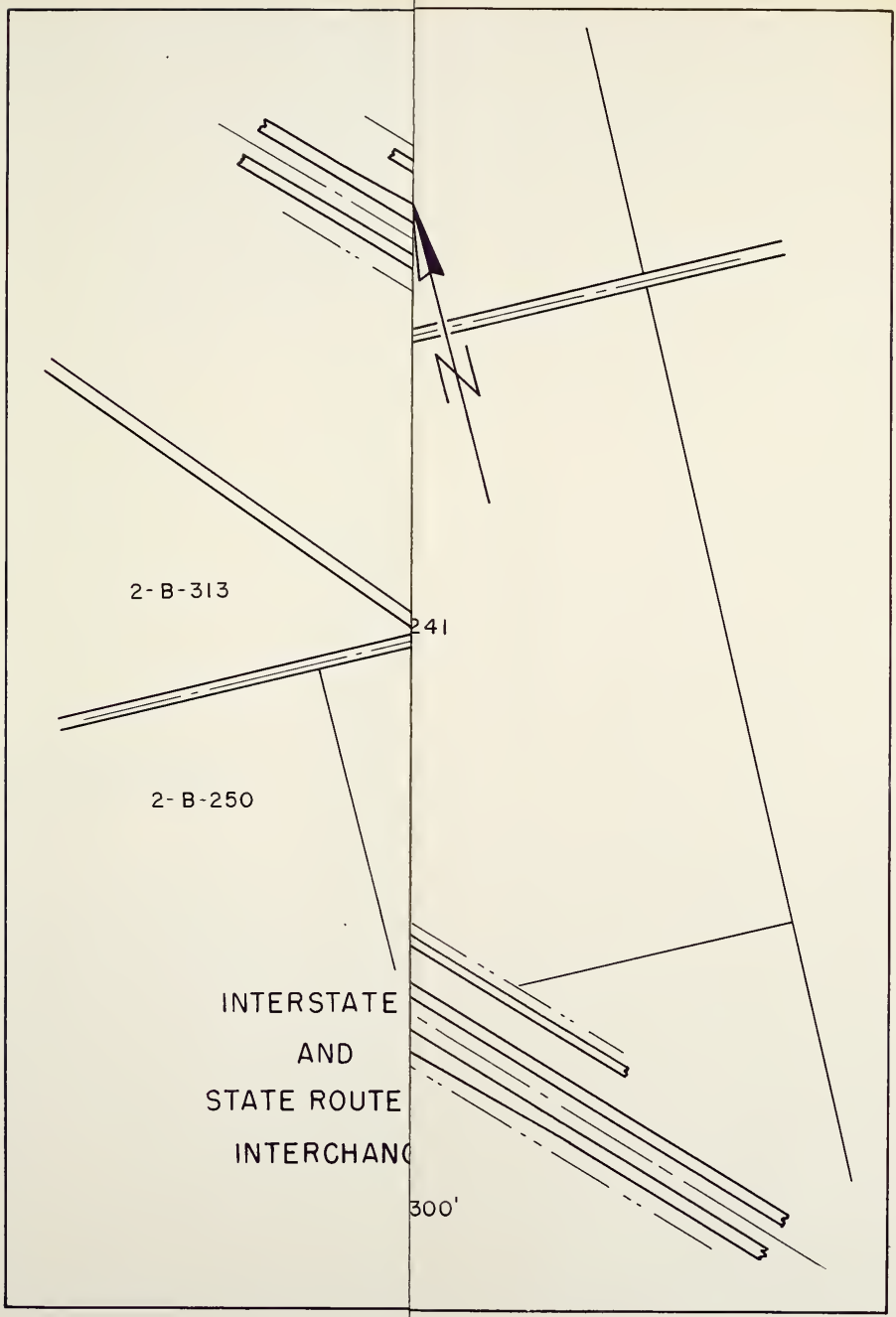
Figure 9

INTERSTATE 65 OVER OLD U. S. 52

Figure 10

CONSTRUCTION - 71st. STREET INTERCHANGE

Figure 11


2-B-313
241
2-B-250
INTERSTATE
AND
STATE ROUTE
INTERCHANG
300'

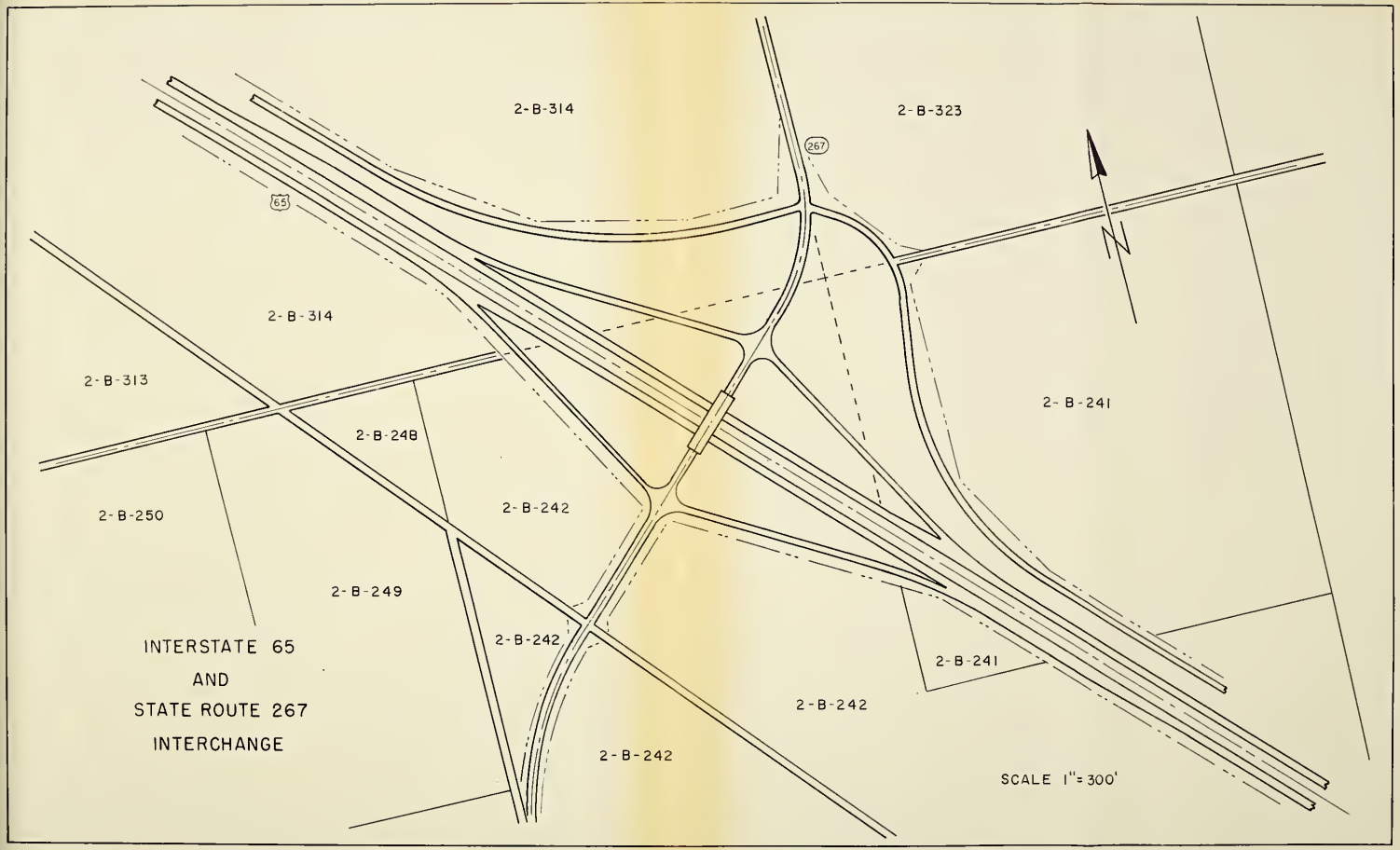
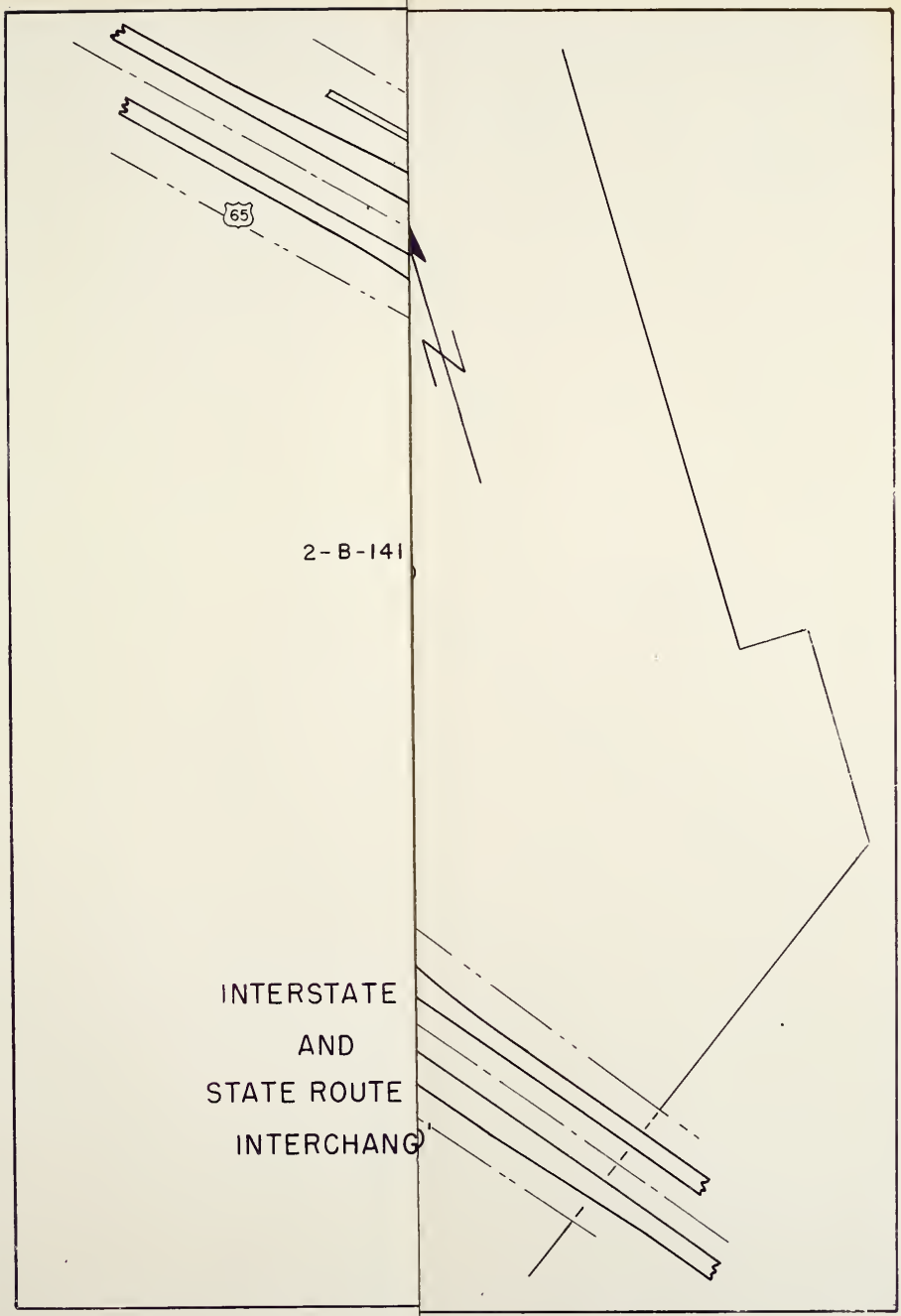

2-B-314
2-B-323
267
65
2-B-314
2-B-313
2-B-248
2-B-241
2-B-250
2-B-242
2-B-249
2-B-242
2-B-241
2-B-242
2-B-242
INTERSTATE 65
AND
STATE ROUTE 267
INTERCHANGE
SCALE 1"=300'

Figure 12


65
2-B-141
INTERSTATE
AND
STATE ROUTE
INTERCHANG

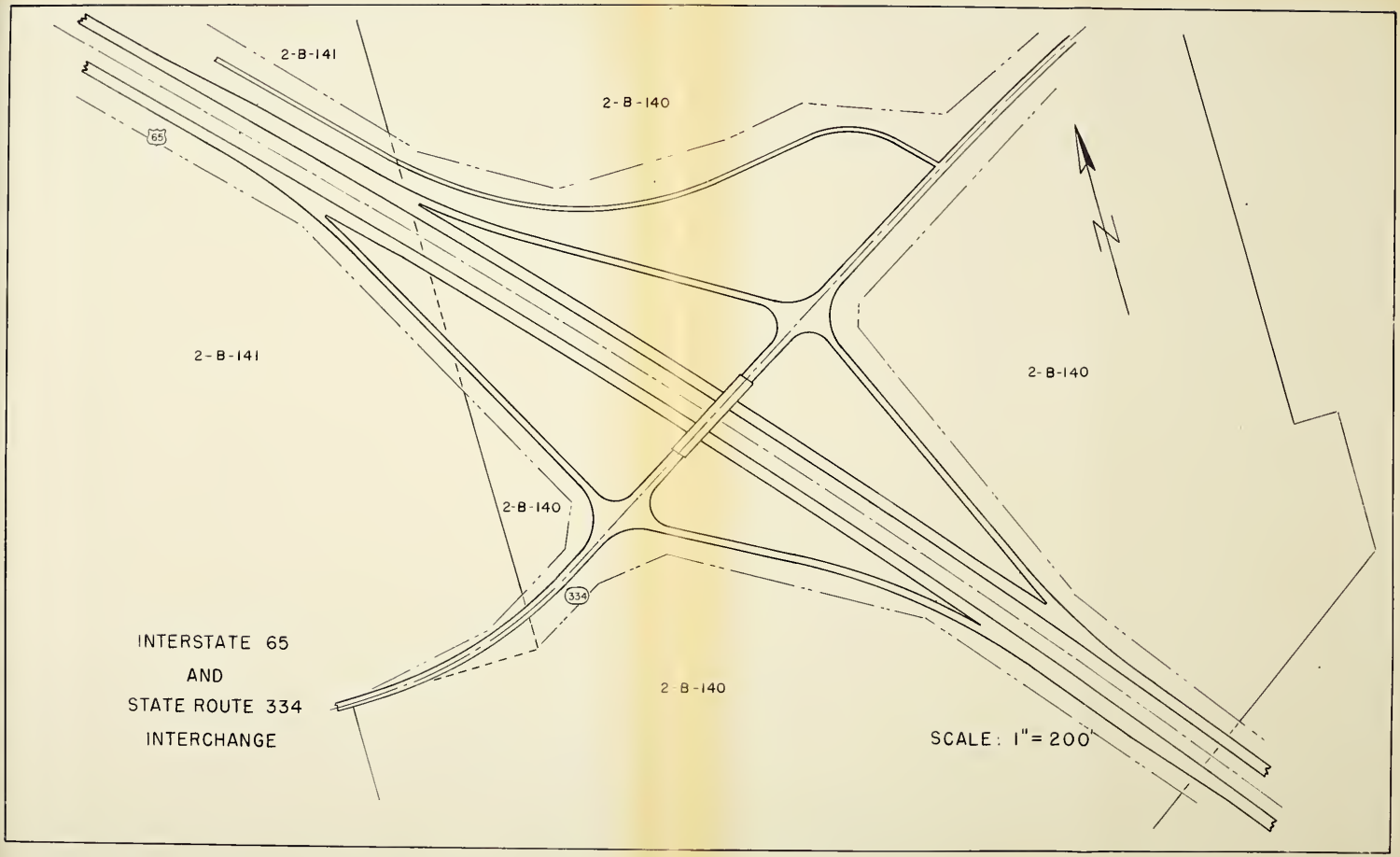

2-B-141
2-B-140
65
2-B-141
2-B-140
2-B-140
334
INTERSTATE 65
AND
STATE ROUTE 334
INTERCHANGE
2-B-140
SCALE: 1" = 200'

Figure 13

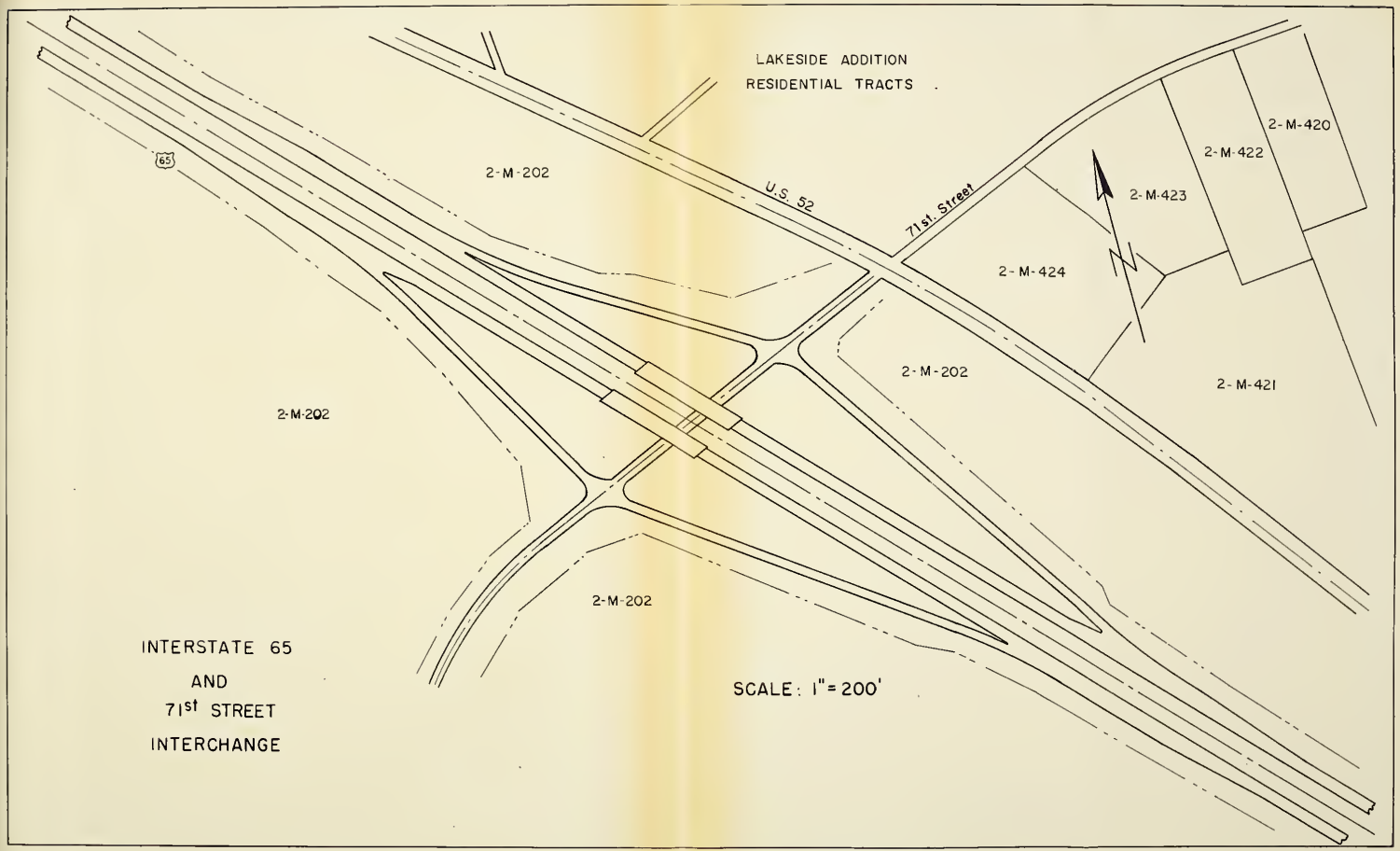
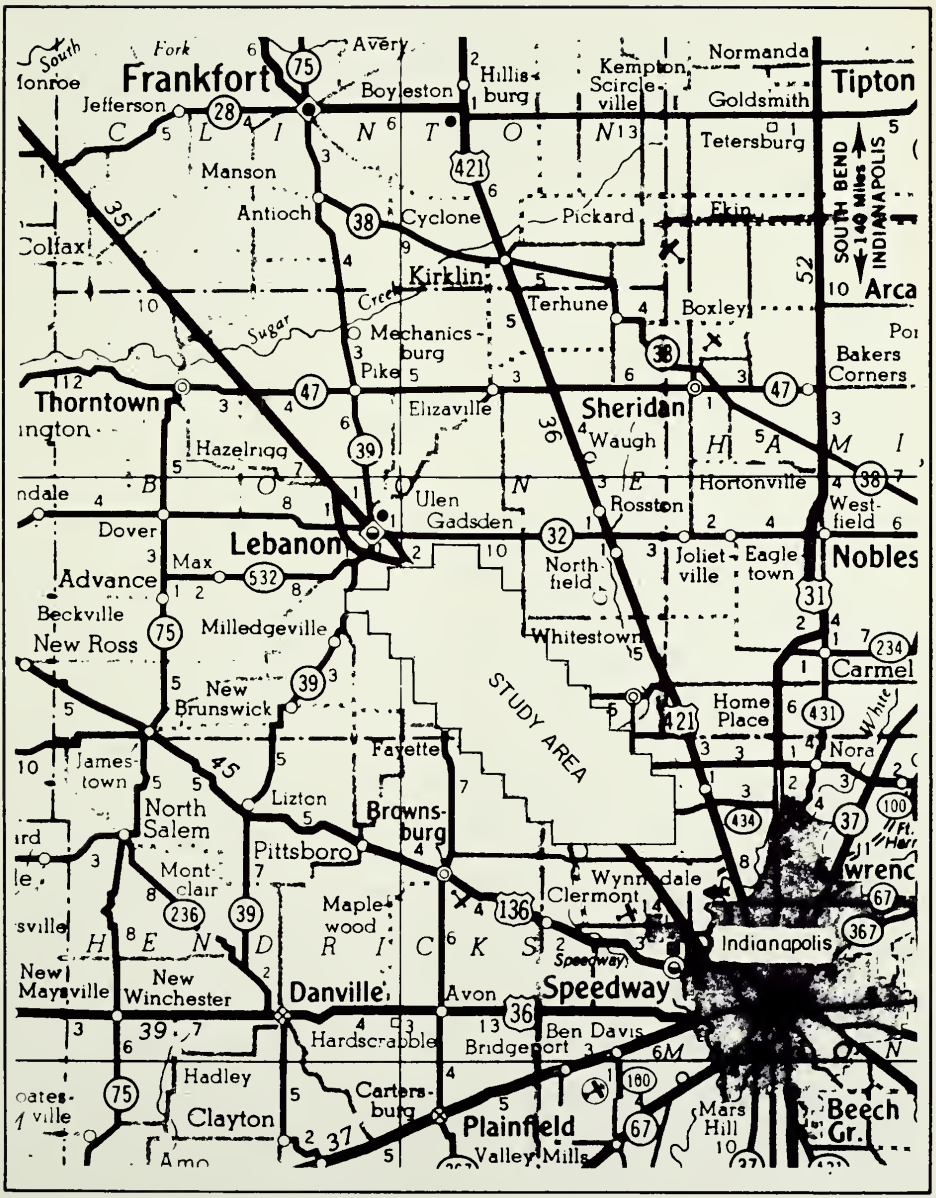

LAKESIDE ADDITION
RESIDENTIAL TRACTS
65
2-M-202
U.S. 52
71st. Street
2-M-420
2-M-422
2-M-423
2-M-424
2-M-421
2-M-202
2-M-202
2-M-202
INTERSTATE 65
AND
71st STREET
INTERCHANGE
SCALE: 1"= 200'

Figure 14



LOCATION OF STUDY AREA

Figure 15

The Boone County study area, approximately forty-five square miles, is almost entirely level agricultural land. There are occasional residential tracts and one small town, Royalton, included in this area. The photographs shown in Figures 7, 8 and 9 show the topography which is typical of most of Boone County.

Toward the southern end of Boone County, and in Hendricks and Marion Counties, the land is also mostly agricultural, but the topography is more rolling, as shown in Figures 10 and 11. Scattered residential areas, and one town, Traders Point, occur within the boundaries of the Marion County study area, which includes approximately fifteen square miles. A few estates are located in this portion of Marion County. It is in this area that development is occurring now, slowly, and substantial development is expected in the near future.

Cost of Facility

It has been estimated that the 41,000 mile Interstate System will cost, when completed, approximately one million dollars per mile. The thirteen mile length of Interstate 65 included in this study cost slightly less than $700,000 per mile, average, but the average per mile cost among the four construction sections showed considerable variation, as shown in Table 2. The most expensive construction section included in this study cost almost $936,000 per mile.

The construction figures shown in Table 2 are estimated figures, based on contract awards, subject to final revision.

TABLE 2

PROJECT COSTS BY ELEMENTS

Project I - 03 - 4(8)		Length 4.087 Miles
ITEM	TOTAL COST	COST PER MILE
Construction	$1,920,126.85	$469,813.00
Professional Engineering	89,519.05	21,903.00
Right-of-way	171,600.00	41,987.00
TOTALS	2,181,245.90	533,703.00
Project I - 03 - 4(11)		**Length 3.200 Miles**
ITEM	TOTAL COST	COST PER MILE
Construction	$1,764,251.89	$551,329.00
Professional Engineering	39,400.00	12,312.00
Right-of-way	204,070.00	63,772.00
TOTALS	2,007,721.89	627,413.00
Project I - 03 - 3(1)		**Length 3.043 Miles**
ITEM	TOTAL COST	COST PER MILE
Construction	$1,676,243.29	$550,852.00
Professional Engineering	75,090.51	24,676.00
Right-of-way	364,700.00	119,849.00
Utility	88,830.00	29,192.00
TOTALS	2,204,863.80	724,569.00

TABLE 2 (continued)

PROJECT COSTS BY ELEMENTS

Project I - 03 - 3(4)		Length 2.751 Miles
ITEM	TOTAL COST	COST PER MILE
Construction	$2,268,569.00	$824,634.00
Professional Engineering	68,406.50	24,866.00
Right-of-way	131,000.00	47,619.00
Utility	106,470.00	38,702.00
TOTALS	2,574,445.50	935,821.00
Totals - All Projects		Length 13.081 Miles
ITEM	TOTAL COST	COST PER MILE
Construction	$7,629,191.03	$583,227.00
Professional Engineering	272,416.06	20,825.00
Right-of-way	871,370.00	66,613.00
Utility	195,300.00	14,930.00
TOTALS	8,968,277.09	685,595.00

For each of the four construction projects, one or more separate contract structures are included in the construction cost figures. Project I - 03 - 4(8) includes a separate contract price for the State Route 267 interchange, for example. The per mile construction cost figures for project I - 03 - 3(4) are considerably higher than the corresponding figures for the other projects, due to the rolling topography in that project area. This necessitated considerably more earthwork, and several additional drainage structures.

The professional engineering costs shown are final figures of amounts paid to consulting engineering firms for preparation of plans for all of the projects involved, including such plans as were necessary for the separate contract structures. The consulting fees paid approximate three percent of the total costs of the projects.

The cost figures shown for right-of-way are estimated costs, based on the original State appraisal figures. These figures are definitely low, but condemnation proceedings for many of the parcels involved are not yet complete. Table 3 shows estimated costs of right-of-way for two of the construction sections involved in this study, based on the Court appraisal figures available in the condemnation cases. These figures on right-of-way costs will be discussed fully in another progress report which deals with partial takings.

TABLE 3

ESTIMATED RIGHT-OF-WAY COSTS

Project I - 03 - 4(8)	Total Cost	Cost per Mile
State Appraisal	$171,600	$41,987
Court Appraisal	236,291	57,815
Project I - 03 - 4(11)	**Total Cost**	**Cost per Mile**
State Appraisal	$204,070	$63,772
Court Appraisal	387,098	120,968

Characteristics of Travel

Traffic Volumes

The question of future volumes on any new facility is extremely interesting. The history of past volume predictions can be summed up in one word: low. The 41,000 mile Interstate System, with the driving convenience associated with these facilities, will, in all probability, increase traffic volumes even more than originally anticipated. Interstate 65 between Indianapolis and Chicago will undoubtedly carry heavy volumes of through traffic in the future, and the particular length of highway included in this study will also carry heavy volumes of commuter traffic between the central business district of Indianapolis and the suburbs which are already growing northward from Indianapolis past the south end of this facility.

Table 4 indicates the annual average daily traffic (AADT) figures for the section of existing U. S. 52 included within the study area prior to the improvement. The corresponding estimated figures for Interstate 65 for 1955 and 1958 are shown in Table 5, together with estimates of the traffic volumes for 1975 and 1978 on the new facility. The 1955 and 1958 figures for Interstate 65 are estimates of the traffic which would have been diverted to the new facility from U. S. 52, if Interstate 65 had been open to traffic in those years.

For the six years prior to 1958 the volumes on U. S. 52 have increased at rates varying from approximately four

TABLE 4

TRAFFIC VOLUMES ON U. S. 52

Description of Section	AADT		
	1952	1955 (Est)	1958
South end of Lebanon by-pass to S.R. 267	7925	8900	9950
S.R. 267 to S.R. 334	7625	8500	9550
S.R. 334 to 71st St.	7650	9300	11000
Southeastwardly from 71st Street	6925	8200	9500

TABLE 5

TRAFFIC VOLUMES ON INTERSTATE 65

Description of Section	Est. AADT			
	1955	1958	1975	1978
South end of Lebanon by-pass to S.R. 267	6976[a]	7800	18626[a]	20830
S.R. 267 to S.R. 334	6855[a]	7700	18303[a]	20560
S. R. 334 to 71st St.	7500	8156[a]	21450	23326[a]
Southeastwardly from 71st Street	7640	8850[a]	21850	25311[a]

a. Figures supplied on construction plans by consultant.

percent per year at the north end of the study area to almost six percent per year at the south end. The development along this facility will naturally grow northward from Indianapolis, and the development traffic encouraged by the existence of the new facility will, in all probability, cause increases in volumes greater than those indicated in Table 5. Because

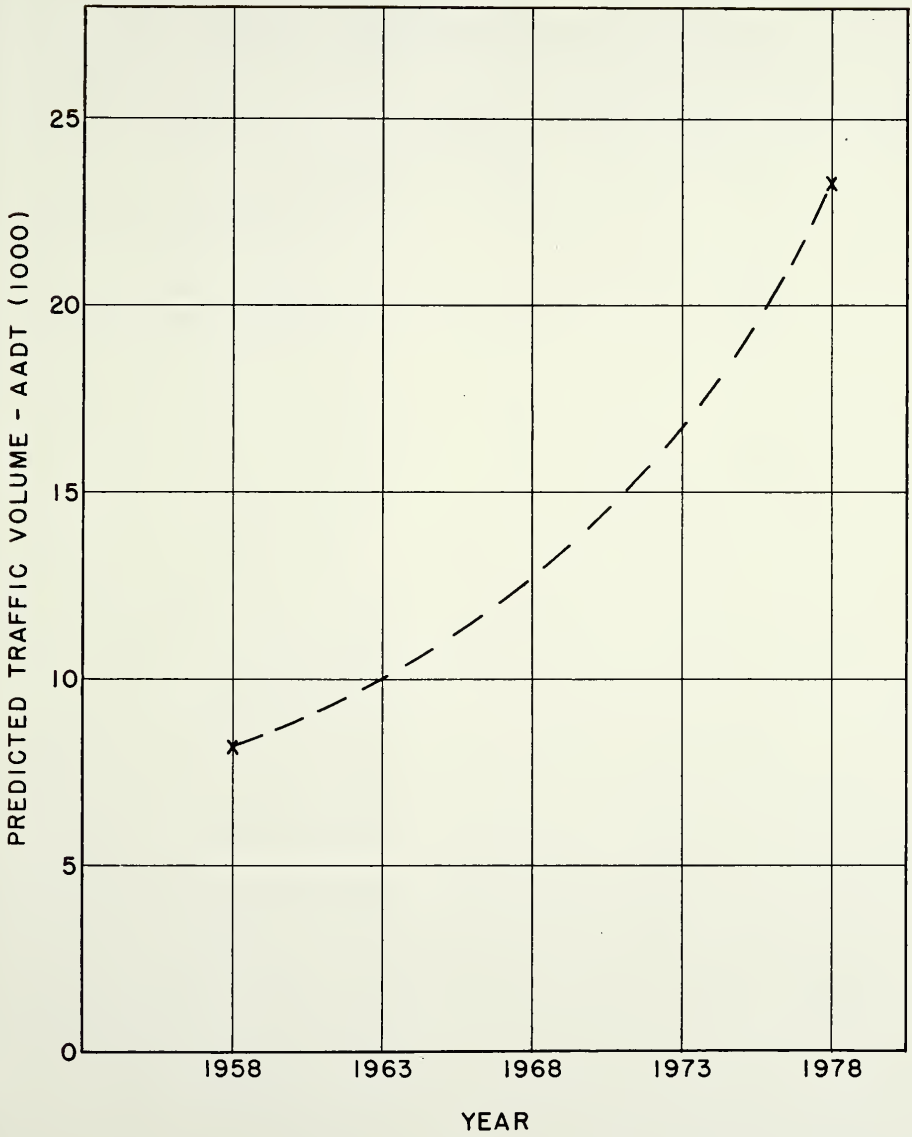
of this outward growth of the Indianapolis metropolitan area, and because the completion of the entire Interstate system is expected to encourage more and more highway motor travel, the future traffic volumes for this facility, as shown in Figure 16, are believed to be conservative. Figure 16 shows the traffic volumes predicted by the consultant for the section of Interstate 65 between S. R. 334 and 71st street.

Speeds and Travel Times

One of the benefits claimed for controlled-access facilities is time savings for the motorist. The geometric design of the highways in the Interstate System is such as to maximize these time savings by virtual elimination of congestion causes such as steep grades, short radius curves, at-grade intersections, and roadside development with its attendant conflicts to vehicular traffic. Such design permits higher speed traffic flow combined with an increase in safety, and leads to additional benefits to the highway user in the form of greater comfort and convenience.

As mentioned previously, U. S. 52 is a two-lane and four-lane highway and has approximately thirty intersections at grade, many driveway entrances, and some interfering roadside development. All of these factors contribute to a reduction in safe driving speed and a corresponding increase in overall travel time. One of the at-grade intersections, with S. R. 100, is signalized, and this also increases travel time.

The length of U. S. 52 within the study area is 13.655



PREDICTED VOLUMES - SOUTH OF S.R. 334

FIGURE 16

TABLE 6

SPEEDS AND TRAVEL TIMES ON U. S. 52
PRIOR TO CONSTRUCTION OF INTERSTATE 65

Section	Length (Miles)	Travel Time	Speed (MPH)
Lebanon by-pass to S. R. 334	7.045	7 min. 51.4 sec.	53.8
S. R. 334 to south end of study facility	6.610	8 min. 27.1 sec.	46.9

miles, and the total average travel time for this distance is 16 minutes and 18.5 seconds. Travel time was measured for the 6.610 miles between the S. R. 334 intersection and the south end of the study area. Because of the similarity between the 7.045 miles of U. S. 52 from the south end of the Lebanon by-pass to S. R. 334 and the south section of the Lebanon by-pass prior to improvement as part of the Interstate System, the average speed of 53.8 miles per hour for passenger cars, as determined by Pinell (1)*, was used in computing travel time for this portion of the study facility. The travel times and the corresponding speeds are shown in Table 6.

Speed data were collected on Interstate 65 by the license plate matching method during March, 1961. The procedures used were as follows:

1. Stations were established in the section of the facility between S. R. 267 and S. R. 334, approximately one-half mile from each interchange to eliminate any effects caused by the acceleration and

*Numbers in parenthesis refer to List of References.

deceleration lanes at these interchanges.

2. The distances between these stations were measured, both southbound and northbound, by means of a calibrated fifth wheel attached to the rear bumper of a standard automobile. This wheel measures distances to the nearest thousandth of a mile. The distance measured in each direction was slightly greater than two miles.
3. Synchronized stop watches were used to record the times of passenger cars entering and leaving the speed course to the nearest second, and the license numbers of these vehicles were recorded at each station to permit matching of the vehicles.
4. After matching the vehicles, travel times to the nearest second were computed and the speed in miles per hour calculated for each passenger vehicle.

Data were recorded for a sufficient number of vehicles to give a standard error of the mean of less than one mile per hour. The results of the study indicated the mean speed in each direction was 61.9 miles per hour, the 85th percentile speed southbound was 66.7 miles per hour, and the 85th percentile speed northbound was 68.1 miles per hour.

The pavement was dry during the data collection period, and the weather cloudy, windy and cool.

Using the average travel time as determined from the license plate method above and the length of 13.081 miles, the total travel time on this portion of Interstate 65 is

TABLE 7

VEHICLE OPERATING COSTS

Facility	Length (Miles)	Operating Cost per Mile (Cents)	Total Vehicle Operating Cost (Cents)
U. S. 52			
a. Lebanon by-pass to S. R. 334	7.045	6.25	44.031
b. S. R. 334 to south end	6.610	6.27	41.445
TOTAL	13.655		85.476
Interstate 65	13.081	6.51	85.157

12 minutes and 46.2 seconds, for passenger vehicles only. This results in a time savings per vehicle of 3 minutes and 32.3 seconds, if Interstate 65 is traveled instead of U. S. 52. Using an AADT of 15,300 vehicles - obtained from Table 5 by averaging the estimated values on all sections for 1958 and 1978 - as the average volume for the twenty year design life of the facility, the total average daily savings in time will be 902 hours, 16 minutes and 30 seconds.

Vehicle operating costs, however, are slightly higher per mile on the new facility, using the AASHO figures (2) for operating costs. Table 7 shows the comparison of operating costs for Interstate 65 and U. S. 52. The shorter distance via Interstate 65 results in a slight saving per vehicle in operating costs.

Including the AASHO value of time of $1.55 per hour and the AASHO values for comfort and convenience, the total average user costs, in cents per vehicle mile, are 9.62 for

U. S. 52 and 9.09 for Interstate 65, or a total user cost per vehicle for the length of the study facilities of $1.31 for U. S. 52 and $1.19 for Interstate 65. Again using the average AADT of 15,300 vehicles per day as an average over the entire twenty year service life of the facilities, the total annual user costs for U. S. 52 are $7,338,000 and for Interstate 65 they are $6,640,000. This results in an annual benefit to highway users of $698,000 due to the highway improvement, or a benefit in twenty years of $1,067,000 per mile.

The benefits due to Interstate 65 as shown above include no savings brought about by accident reductions. Accident experience on the old and new facilities are discussed in the succeeding section.

Accidents

The accident portion of this study is an extremely important one. One of the major benefits claimed for a controlled-access facility is accident reduction, and many facilities of this type have brought about significant accident reductions.

Accident experience on rural highways in twenty-seven states (3) with full, partial, and no control of access are shown in Table 8. These figures indicate a definite reduction in number of accidents, fatalities and injuries on facilities with some degree of access control, with full control obviously being the safest.

A summary of accident statistics for the facilities of

TABLE 8

ACCIDENT RATES PER 100 MILLION
VEHICLE-MILES OF TRAVEL

Degree of Access Control	Accidents	Fatalities	Injuries
Full	156	3.4	136
Partial	209	6.3	148
No Control	344	10.3	214

this study appears in Table 9 , as obtained from the accident reports on file with the Indiana State Police. All of the data shown for Marion and Hendricks Counties are for U. S. 52, and the 1957 through 1959 data for Boone County are also for U. S. 52 only. The data shown for Boone County in 1960 includes the seven mile section of Interstate 65 north of the S. R. 334 interchange as well as all of old U. S. 52 within the Boone County study area.

Three accidents occurred on the short section of U. S. 52 in Hendricks County in the four year period for which data were obtained, with no fatalities and two injuries recorded.

Of the thirty-seven accidents in Boone County in 1960, nineteen occurred at the S. R. 334 interchange, where for most of 1960 vehicles were required to use only U. S. 52 from that point to the southeast. Most of these accidents were caused by the interchange being used for a purpose for which it was not designed, and this situation has been alleviated at this interchange now that additional mileage of Interstate 65

TABLE 9

ACCIDENT SUMMARY

Year	County	Number of Accidents	Fatalities	Persons Injured	Property Damage
1957	Boone	48	NA[a]	24	$28030 (40)[b]
1958	Boone	34	1	12	22320 (29)
1959	Boone	54	3	35	49250 (44)
1960	Boone	37	1	16	18083 (35)
1957	Marion	54	NA[a]	26	24532 (47)
1958	Marion	56	2	33	37906 (44)
1959	Marion	40	0	27	24070 (38)
1960	Marion	45	3	22	44270 (42)

a. Not Available
b. Numbers in parentheses refer to the number of accidents for which property damage was estimated on the reports.

south of S. R. 334 has been opened to traffic.

For the entire year of 1960, only nine accidents occurred on the seven mile stretch of Interstate 65 in Boone County, except those which occurred at S. R. 334, with no fatalities, seven injuries, and property damage of $7067.

Because the Boone County portion of Interstate 65 is now entirely open to traffic, the 1961 accident results, when available, will permit comparison with those figures shown in Table 9 for U. S. 52. The Marion County section of Interstate 65 should be completed in 1961, permitting analyses of accident figures for Marion County for 1962 and thereafter.

Changes in Traffic Patterns

Table 10 summarizes the effects of the construction of Interstate 65 on the intersections along the length of U. S. 52 included in the study area. Of thirty at-grade intersections, sixteen were not affected by the construction. Virtually all of these were Y or T intersections, with the intersecting leg on the opposite side of U. S. 52 from the construction. Seven intersecting roads were closed by the limited access, and either abandoned or terminated at a frontage road. One leg each of two four-leg intersections was closed, and interchanges or overpasses were provided at the remaining five locations.

Because of the close spacing of the interchanges on Interstate 65 in the study area, there should be no great increase in driving distance for most motorists in the vicinity. An interchange is located at the south end of the Lebanon by-pass, just north of the study area; the S. R. 267 interchange is approximately four miles south of this interchange; the S. R. 334 interchange is three miles farther south; and the 71st Street interchange is approximately one mile north of the south limits of the study area. An overpass over U. S. 52 is provided between the interchanges at S. R. 334 and 71st Street, and the partial directional interchange with S. R. 100 is also proposed within this six mile section. A relocated entry road to Traders Point from the west also passes over Interstate 65 in this area.

These interchanges, together with the frontage roads

TABLE 10

SUMMARY OF U. S. 52 INTERSECTIONS

Construction Project Number	Intersecting Highway Type	Intersection Type	Disposition After Construction
I-03-4(8)			
	County Road	Y	Not Affected
	County Road	Y	Not Affected
	County Road	Y	Not Affected
	County Road	Y	Closed
	S. R. 267 & County Road	5-leg	Interchange
I-03-4(11)	County Road	Y	Closed
	County Road	Y	Closed
	County Road	Y	Not Affected
	County Road	4-leg	One leg Closed
	County Road	Y	Not Affected
	S. R. 334	4-leg	Interchange
I-03-3(1)	County Road	Y	Closed
	County Road	Y	Not Affected
	County Road	Y	Not Affected
	County Road	4-leg	Closed
	County Road	4-leg	Closed
	County Road	Y	Not Affected
	County Road	Y	Not Affected
	Residential Street	T	Not Affected
	Residential Street	T	Not Affected
	S. R. 100	4-leg	Overpass
I-03-3(4)	Residential Street	Y	Not Affected
	Residential Street	Y	Not Affected
	County Road	4-leg	One leg Closed
	County Road	Y	Not Affected
	County Road	T	Overpass
	Residential Street	Y	Not Affected
	Residential Street	T	Not Affected
	71st Street	Y	Interchange
	County Road	Y	Closed

and overpasses, permit convenient crossing of the new facility at sufficient locations to minimize disruption of local traffic patterns, except for some farmers who do not live at an interchange and have property on both sides of Interstate 65.

Land Use

One of the more sensitive indicators of economic activity in an area is the frequency of land use changes. As the area of idle land decreases, or as agricultural land is converted to residential, commercial or industrial use, the economic level of the area changes. The relative rates of change in land use provide a comparison of the economic growth of similar areas.

The Indiana State Highway Department furnished aerial photographs of the study area surrounding this portion of Interstate 65 in the spring of 1960. Mosaics were constructed from these photographs to an approximate scale of one inch to one thousand feet. These mosaics are an extremely useful indicator of land use in 1960. The information obtained from a study of these mosaics has been supplemented by personal observations of land use in the study area. Table II shows the current land use by counties, and Figures 2 through 5 show the land use adjacent to the study facility.

Land use changes have not occurred to any measurable degree in the study area as of March, 1961. Because of the agricultural nature of the majority of the land and the dist-

TABLE II

LAND USE BY COUNTIES (PERCENT OF AREA)

County	Land Use			
	Agricultural	Residential	Idle	Unclassified
Boone	99.45	0.15	--	0.40
Hendricks	99.59	0.41	--	----
Marion	49.42	10.36	38.99	1.23

ances from major urban areas, it is anticipated that such changes will occur slowly at first, naturally along the southern end of the facility, and then at an increasing rate throughout the study period.

Land Value

Major land value changes generally occur as land use changes occur. A tract of bare ground may be virtually worthless as bare ground, but converted to farm land increases in value, and when subdivided into residential tracts becomes even more valuable. Land may change in value without changing use, naturally, but the major value changes occur because of anticipated or realized use changes.

Once improvements are added to a tract of land it becomes difficult to distinguish between land value and value of the improvements. For the land value study reported here, therefore, it was decided to study only those parcels to which no improvements were added through a period of two or more sales. For instance, if an unimproved tract were sold twice the selling prices involved in these transactions would be

compared, as would the selling prices of a residence or business sold twice. A tract sold once as an unimproved residential tract and once after a house was built, however, would not be studied until sold again as a residence, at which time the two comparable sales would be analyzed. Similarly, the sale of an agricultural tract to a developer and the sale of the individual lots by the developer are not comparable if the developer added improvements in the form of streets, sanitary or storm sewers, water lines, gas lines, or electric power.

The year 1950 was chosen as the base year for this study to provide sufficient time prior to the start of acquisition of right-of-way to establish trends in property transfers. All information concerning the property owners and the acreages owned as of the base year was obtained from the offices of the Auditors of the Counties included within the study area. A key map was then drawn showing all parcels existing in 1950. These parcels were then coded, using the procedures described fully in Appendix A. Every property transaction since 1950 was then recorded on Deed History Sheets, shown in Figure 17, whether the transaction was a transfer of property, a split, or a subdivision, with the new owner and the date of purchase recorded on these sheets. An alphabetical file was then established of all property owners, regardless of the size of the parcel owned or the length of time the tract was owned, giving the name of the owner, the

DEED HISTORY

Parcel Number _____ County

Plat Number ____, Section # ___ , T ____, R ____; Political Twp. _____

****

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # _____

****

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

****

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # _____

****

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # _____

****

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

DEED HISTORY SHEET

Figure 17

code number of the parcel, the acreage, the location, and the buyer of the parcel, if any. Typical cards are shown in Figure 18.

From the Deed History Sheets a list of the buyers and sellers of all properties involved in two or more transactions since 1955 was compiled, and copies of the deeds recorded for these transactions were obtained. The property value was then determined from the Federal Revenue Stamps affixed to these deeds. Sixty-nine properties, involving one hundred twenty-three transactions were found. All buyers of these properties whose mailing addresses could be obtained were then contacted by letter (Figure 19) requesting their cooperation in the study, and a form was enclosed on which they were asked to indicate the price paid for the property. A typical form is shown in Figure 20. Of ninety-four letters which were mailed thirty-eight were returned, and only two of those returned indicated that they did not wish to cooperate. Table 12 indicates the comparisons of the value indicated by the Federal Revenue Stamps and the value indicated in the letter replies, for the sales considered bona fide. Such sales do not include transactions between relatives, or transactions involving trading of real estate. The very close correlation between these figures indicates that the Federal Revenue Stamps accurately reflect the trends in property values in the study area.

Two of the transactions appeared a bit peculiar and deserve some explanation. The buyer's indicated value for

Smith, J. Q.

2222 East 49th Street, Chicago, Illinois

2 - B - 527 - A

0.01 Ac. Sec. 37, T18N, R2E

Sold to J. A. Omarson 12 - 12 - 60

Omarson, J. A.

1111 East 37th Street, Indianapolis

2 - B - 527 - A

0.01 Ac. Sec. 37, T18N, R2E

TYPICAL FILE CARDS

Figure 18

PURDUE UNIVERSITY
ENGINEERING EXPERIMENT STATION
JOINT HIGHWAY RESEARCH PROJECT
WITH
STATE HIGHWAY DEPARTMENT OF INDIANA
LAFAYETTE, INDIANA

December 1, 1960

Buyer Number One
9999 Lover's Lane
Indianapolis, Indiana

Dear Sir:

The Joint Highway Research Project at Purdue University is currently conducting a study of the economic impact of highway improvements. Interstate Highway No. 65 is one of the highways in this study. One of the objectives of the study is to evaluate the damages and benefits which occur to residents and property owners in the area of this new highway. One of the items of interest in the study is property value and it is here that we need your help.

The 129.85 acre tract located in Section 37, T 18 N, R 3 E, Boone County which you purchased from Seller Number One on or about December 1, 1956, is within the study area. We would appreciate it very much if you would furnish us with the total purchase price of this property. The reports of this study will not use your name in any way - each tract of property will be identified only by a code number. We also assure you that the information you provide will be confidential.

Accurate cost information is extremely important to this study so that factual evaluation of damages and benefits can be obtained and a more accurate appraisal of right-of-way required for future highways can result. Please complete the attached form and mail one copy in the enclosed envelope at your earliest convenience. Thank you very much for your assistance.

Very truly yours,

Enclosures

REQUEST FOR LAND VALUE DATA
Figure 19

Dear Sir:

I do (do not) wish to cooperate in the study of the damages and benefits which occur to property due to highway improvements. The _____ acre tract located in _____ which I purchased from _____ on or about _____, 19__ was purchased for a total price of $_____.

Very truly yours,

_____
(Signature)

REMARKS: (Please report anything which you believe would be of value in evaluating damages or benefit from Interstate 65 to the property referred to in this report.) _____

FORM ENCLOSED WITH LETTER

Figure 20

TABLE 12

COMPARISON OF INDICATED VALUES OF TRANSACTIONS

Parcel Number	Indicated Value-Revenue Stamps	Indicated Value-Buyers
2-B-22	3500 3500	2500-2800 3500
2-B-112-B-5	1000	1000
2-B-112-B-6	1000	900
2-B-213-B-4	1000 1000	800 900
2-B-213-B-7	4500 5500	4500 5000
2-B-213-C-3	1000	1000
2-B-213-C-4	1000	1600
2-B-213-C-7	1000 1500	1000 1500
2-B-442-B	6500 7500	6200 7750
2-M-33-J	1000 2000	900 1700
2-M-33-M	1500	1350
2-M-66	2500	2500
2-M-323	3000	3150
2-M-417-F	1000	2000
2-M-417-G	1000	1000
2-M-431	21500 15000	21500 15000
TOTALS	87000	87250

parcel 2 - B - 22 was obtained from the daughter of the purchaser, who indicated that she felt that the purchase price paid by her deceased mother was in the neighborhood of $2500-$2800. The decrease in value shown for parcel 2 - M - 431 should not be construed as indicating a trend in land value, as the first transaction was a purchase for a specific purpose, and the original buyer obtained a sufficient return on his investment through a specific land use to justify the sale at the lower figure.

Table 14 shows the results of the land value study for this facility to date. No parcels included in this Table were directly affected by right-of-way purchases, because no parcels involved in partial takings have been sold twice since 1955. The band letters shown in the last column refer to the distances from the facility as shown in Table 13. Because of the limited number of sold parcels included in each band, no analysis of changes in land value has been made, but it is apparent from even these limited data that no decrease in land values has occurred since 1955 within the study area.

TABLE 13

BAND WIDTHS

Band	Distances From Facility (Miles)
A	0 to 1/4
B	1/4 to 3/4
C	3/4 to 1-1/2
D	Beyond 1-1/2

TABLE 14

LAND VALUE DATA

Parcel Number	Sale Number	Acreage	Date of Transaction	Indicated Value*	Band
2-M-237-B	1	0.44	1955	1000	A
	2		1957	1500	
2-M-399-D-4	1	Lot	1960	1500	A
	2	(Platted)	1960	2000	
2-M-417-F	1	0.44	1957	1000	A
	2		1958	1000	
	3		1959	2000	
2-M-417-G	1	0.44	1957	1000	A
	2		1958	2000	
2-M-417-H	1	0.44	1957	1000	A
	2		1959	1000	
2-B-60-E	1	1.233	1957	1500	A
	2		1957	1500	
2-M-26	1	1.0	1958	15000	B
	2		1959	15000	
2-M-28-R	1	0.60	1955	1000	B
	2		1956	1000	
	3		1957	1000	
2-M-33-J	1	1.0	1956	900	B
	2		1957	1350	
	3		1960	1700	
2-M-33-M	1	1.0	1957	1000	B
	2		1957	1350	
	3		1960	1700	
2-M-109-B-2	1	2.009	1957	3000	B
	2		1960	4000	
2-M-109-C-1	1	9.229	1955	4500	B
	2		1956	7000	
2-M-184-D-1	1	21.21	1959	4500	B
	2		1959	4500	

* Indicated value shown (in dollars) is the value given in the letter reply, if available. If not, the indicated value is the value shown by the Federal Revenue Stamps.

TABLE 14 continued

LAND VALUE DATA

Parcel Number	Sale Number	Acreage	Date of Transaction	Indicated Value*	Band
2-M-286	1	Lot	1955	1500	B
	2	(Platted)	1955	1000	
2-M-323	1	Lot	1955	3000	B
	2	(Platted)	1956	3150	
2-M-66	1	Lot	1955	1500	C
	2	(Platted)	1956	2500	
	3		1956	3000	
	4		1959	4000	
2-M-378-C-10	1	Lot	1959	2500	C
	2	(Platted)	1960	2500	
2-M-431	1	29.11	1958	21500	C
	2		1958	15000	
2-B-183-C	1	0.66	1959	500	C
	2		1960	1000	
2-B-213-B-4	1	1.41	1955	800	C
	2		1956	900	
2-B-213-B-7	1	10.25	1956	4500	C
	2		1957	5000	
	3		1960	6000	
2-B-213-C-7	1	Lot	1955	1000	C
	2	(Platted)	1960	1000	
2-B-442-B	1	0.565	1956	6200	C
	2		1957	7750	
2-B-22	1	0.33	1955	2800	D
	2		1959	3500	
2-B-112-B-5	1	Lot	1955	1000	D
	2	(Platted)	1959	1000	
2-B-112-B-6	1	Lot	1956	500	D
	2	(Platted)	1956	900	

* Indicated value shown (in dollars) is the value given in the letter reply, if available. If not, the indicated value is the value shown by the Federal Revenue Stamps.

TABLE 14 continued

LAND VALUE DATA

Parcel Number	Sale Number	Acreage	Date of Transaction	Indicated Value*	Band
2-B-112-B-7	1 2	Lot (Platted)	1955 1956	1000 1000	D
2-B-112-B-19	1 2	Lot (Platted)	1955 1958	1000 1000	D

* Indicated value shown (in dollars) is the value given in the letter reply, if available. If not, the indicated value is the value shown by the Federal Revenue Stamps.

The band concept is being used for the land use and land value portion of this study instead of the control area method to permit analyses of land use and land value changes occurring at different distances from the highway improvement.

SUMMARY AND RECOMMENDATIONS

Summary of Results

The results determined from the study of this 13.081 mile section of Interstate 65 are as follows:

1. The cost of the new facility averaged slightly less than $700,000 per mile, over the entire 13.081 mile length of the facility.
2. The estimated total time savings for passenger vehicles using Interstate 65 for the full 13.081 miles instead of the adjacent U. S. 52 are expected to average 900 hours daily throughout the twenty year design life of the new facility.
3. Benefits to passenger car users, excluding accident benefits, are estimated at slightly more than $1,000,000 per mile over the design life of the facility, for this section of Interstate 65.
4. The 1960 accident results in Boone County indicated a reduction in accident frequency on the new facility as compared to U. S. 52, but the results, because of the element of time, are as yet inconclusive.
5. Little change in traffic patterns, except to farmers with land on both sides of Interstate 65, resulted from construction of the limited-access facility,

because of the numerous interchanges, overpasses, and frontage roads.

6. Virtually all land in the study area in Boone and Hendricks Counties is used for agricultural purposes in 1960.
7. Approximately one-half of the land in the study area in Marion County is agricultural, forty percent idle land, and ten per cent residential in 1960.
8. Few land use changes have occurred within the study area during the period 1955 to 1960.
9. Federal Revenue Stamps affixed to deeds accurately indicated the selling prices of land in the study area between 1955 and 1960.
10. Insufficient data are available to permit analyses of trends in land use and land value in the study bands A, B, C and D, but it is apparent that no reduction in land value has occurred since 1955.

Recommendations

1. All phases of these studies should be continued for each of the six types of highway improvements involved for at least ten years, and longer if the results justify an extension of the study period.
2. Final cost figures for the portion of Interstate 65 discussed in this report should be obtained when available.
3. Volume counts should be taken on each portion of Interstate 65 annually.

4. Travel time studies should be performed on Interstate 65 annually or bi-annually, preferably in conjunction with the volume counts mentioned above.
5. The accident records should be obtained annually, and analyzed when sufficient records are available after the entire study facility is open to traffic.
6. Aerial photographs should be obtained, mosaics constructed, and land-use overlays prepared for the entire study area every few years.
7. Because of the close correlation between property values as indicated by the Federal Revenue Stamps and as indicated by the replies to the letters sent to buyers of property in the study area, no more letters should be sent, and the property values should be determined from the Federal Revenue Stamps.
8. All data regarding property ownership and sales should be kept current.
9. Periodic analyses of land value changes should be made as such data become available.

LIST OF REFERENCES

List of References

1. Pinnell, Charles, "An Evaluation Study of Two Non-Limited Access By-Passes in Indiana", a Thesis submitted to the faculty of Purdue University for the Degree of Master of Science in Civil Engineering, January, 1958.

2. American Association of State Highway Officials, "Road User Benefit Analyses for Highway Improvements", 1960.

3. Automobile Manufactures Association, "Automobile Facts and Figures", 1958.

APPENDIX A

CODING PROCEDURES

The coding system used to identify properties within the study area is an alternate number-letter-number system. The initial number refers to the type of facility as listed previously. The number used for all parcels in this report is 2, the second type of facility. The first letter refers to the location of the parcel - B for Boone County, H for Hendricks County, M for Marion County, R for Royalton, and T for Traders Point Heights Subdivision. The parcels within each county or subdivision are numbered consecutively, including all tracts shown on the key map as of the year 1950. If adjacent tracts in two different sections of the same county were owned by the same person, one code number was used to identify these parcels. No code numbers extended across county lines regardless of ownership, however.

Figures 21a through 21e illustrate the coding system beyond the first three places. Originally a tract of 180.0 acres is owned by Owner #1, who owned the property in 1950. The code number of this parcel is originally 2 - B - 1000. Owner #1 sells the entire tract to Owner #2, and the code number is still the same. Owner #2 sells a 40.0 acre tract to #3, so the code number of the original tract is changed to 2 - B - 1000 - A, to indicate that it has been split, and

the code number of the 40.0 acres becomes 2 - B - 1000 - B. Owner #2 then sells 60.0 additional acres from the original tract to Owner #4, and this code number becomes 2 - B - 1000 - C. Owner #3 then sells his entire 40.0 acres to Owner #5, with no change in code number, but Owner #5 sells 20.0 acres from this tract to Owner #6, changing the code number of the 40.0 acres to 2 - B - 1000 - B - 1, to indicate a split, and the 20.0 acres bought by #6 becomes 2 - B - 1000 - B - 2. Owner #6 then splits his 20.0 acre tract, changing the code number to 2 - B - 1000 - B - 2 - A, and the five acres bought from him by Owner #7 becomes 2 - B - 1000 - B - 2 - B. Owner #2 then sells all his remaining acreage to Owner #8 with no change in code number.

The acreages shown in parentheses in the Figures are those owned at one time by the owner shown on the line headed TO, with the acreages outside the parentheses the final acreages owned by that person. The total acreages outside of the parentheses of all parcels with code numbers starting 2 - B - 1000 -- must equal the first acreage in parenthesis on sheet 2 - B - 1000 - A, which is the original acreage owned in 1950 by the original owner. Any further splits are coded similarly.

DEED HISTORY

Parcel Number 2 - B - 1000 - A Boone County

Plat Number 65, Section # 37, T 20N, R 3E, Political Twp. Tippecanoe

From _____ Address _____

To Owner # 1 Address _____

Date of Transfer _____ Transfer Book # _____, Page # _____

Acres 180.0 Deed Record # _____, Page # _____

From Owner # 1 Address _____

To Owner # 2 Address _____

Date of Transfer 10 - 10 - 50 Transfer Book # _____, Page # _____

Acres (180.0)(140.0) 80.0 Deed Record # _____, Page # _____

From Owner # 2 Address _____

To Owner # 8 Address _____

Date of Transfer 11- 11 - 60 Transfer Book # _____, Page # _____

Acres 80.0 Deed Record # _____, Page # _____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # _____, Page # _____

Acres _____ Deed Record # _____, Page # _____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # _____, Page # _____

Acres _____ Deed Record # _____, Page # _____

EXAMPLES OF CODED PARCELS

Figure 21 a

DEED HISTORY

Parcel Number 2 - B - 1000 - B - 1 Boone County

Plat Number ____, Section # 37 , T 20N , R 3E ; Political Twp. Tippecanoe

From Owner # 2 Address _____

To Owner # 3 Address _____

Date of Transfer 12 - 12 - 51 Transfer Book # ____, Page # ____

Acres 40.0 Deed Record # _____, Page # ____

From Owner # 3 Address _____

To Owner # 5 Address _____

Date of Transfer 6 - 6 - 52 Transfer Book # ____, Page # ____

Acres (40.0) 20.0 Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

EXAMPLES OF CODED PARCELS

Figure 21b

DEED HISTORY

Parcel Number 2 - B - 1000 - B - 2 - A Boone County

Plat Number ____, Section # 37 , T 20N , R 3E ; Political Twp. Tippecanoe

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From Owner # 5 Address _____

To Owner # 6 Address _____

Date of Transfer 7 - 7 - 52 Transfer Book # ____, Page # ____

Acres (20.0) 15.0 Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

EXAMPLES OF CODED PARCELS

Figure 21c

DEED HISTORY

Parcel Number 2 - B - 1000 - B - 2 - B Boone County

Plat Number ____, Section # 37 , T 20N , R 3E ; Political Twp. Tippecanoe

From Owner # 6 Address _____

To Owner # 7 Address _____

Date of Transfer 8 - 8 - 53 Transfer Book # ____, Page # ____

Acres 5.0 Deed Record # ____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # ____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # ____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # ____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # ____, Page # ____

EXAMPLES OF CODED PARCELS

Figure 21d

DEED HISTORY

Parcel Number 2 - B - 1000 - C Boone County

Plat Number ____, Section # 37 , T 20N, R 3E ; Political Twp. Tippecanoe

From Owner # 2 Address _____

To Owner # 4 Address _____

Date of Transfer 1 - 1 - 52 Transfer Book # ____, Page # ____

Acres 60.0 Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

From _____ Address _____

To _____ Address _____

Date of Transfer _____ Transfer Book # ____, Page # ____

Acres _____ Deed Record # _____, Page # ____

EXAMPLES OF CODED PARCELS

Figure 21 e